

IN THE SPECIFICATION:

Please amend the specification as follows:

1. Amend the first paragraph at page 1, line 3

The present invention relates to a method for transmitting data packets from a mobile terminal to a base station using a hybrid automatic repeat request protocol and soft combining of received data. Further, the present invention provides a base station and a mobile terminal both adapted configured to perform the respective method steps. Moreover, a communication system is provided which comprises at least one base station and at least one mobile terminal. ~~The present invention also provides a computer readable medium for storing instructions that, when executed on a processor, cause the processor to transmit data packets from a mobile terminal to a base station using a hybrid automatic repeat request protocol and soft combining of received data.~~

2. Amend the third full paragraph at page 2

In HARQ Type I the erroneous data packets received, also called PDUs (Packet Data Unit) are discarded and new copy of that PDU is retransmitted and decoded separately. There is no

combining of earlier and later versions of that PDU. Using HARQ Type II the erroneous PDU that needs to be retransmitted is not discarded, but is combined with some incremental redundancy bits provided by the transmitter for subsequent decoding.

Retransmitted PDU sometimes have higher coding rates and are combined at the receiver with the stored values. ~~That~~ This means that only little redundancy is added in each retransmission.

3. Amend the last full paragraph at page 2:

When employing chase combining the retransmission packets carry identical symbols. In this case the multiple received packets are combined either by a symbol by symbol or by a bit by bit basis (see D. Chase: "Code combining: A maximum-likelihood decoding approach for combining an arbitrary number of noisy packets", IEEE Transactions on Communications, Vol. COM-33, pages 385 to 393, May 1985, incorporated herein by reference). These combined values are stored in the soft buffers of respective HARQ processes.

4. Amend the first paragraph at page 4

The high level R99/4/5 architecture of Universal Mobile Telecommunication System (UMTS) is shown in Fig. 1 (see 3GPP TR 25.401: "UTRAN Overall Description", available from <http://www.3gpp.org>, incorporated herein by reference). The network elements are functionally grouped into the Core Network (CN) 101, the UMTS Terrestrial Radio Access Network (UTRAN) 102 and the User Equipment (UE) 103. The UTRAN 102 is responsible for handling all radio-related functionality, while the CN 101 is responsible for routing calls and data connections to external networks. The interconnections of these network elements are defined by open interfaces (Iu, Uu). It should be noted that UMTS system is modular and it is therefore possible to have several network elements of the same type.

5. Amend the last full paragraph at page 4

Uplink enhancements for Dedicated Transport Channels (DTCH) are currently studied by the 3GPP Technical Specification Group RAN (see 3GPP TR 25.896: "Feasibility Study for Enhanced Uplink for UTRA FDD (Release 6)", available at <http://www.3gpp.org>, incorporated herein by reference). Since the use of IP-based services become more important, there is an increasing demand to

improve the coverage and throughput of the RAN as well as to reduce the delay of the uplink dedicated transport channels. Streaming, interactive and background services could benefit from this enhanced uplink.

6. Amend the second full paragraph at page 5

To support enhancements described above, a new MAC sub-layer is introduced which will be called MAC-eu in the following (see 3GPP TSG RAN WG1, meeting #31, Tdoc R01-030284, "Scheduled and Autonomous Mode Operation for the Enhanced Uplink", incorporated herein by reference). The entities of this new sub-layer, which will be described in more detail in the following sections, may be located in user equipment and Node B. On user equipment side, the MAC-eu performs the new task of multiplexing upper layer data (e.g. MAC-d) data into the new enhanced transport channels and operating HARQ protocol transmitting entities.

7. Amend the third paragraph at page 6

Every MAC-eu entity corresponds to a user (UE). In Fig. 6 the Node B MAC-eu architecture is depicted in more detail. It can be noted that each HARQ Receiver entity is assigned certain amount or area of the soft buffer memory for combining the bits

of the packets from outstanding retransmissions. Once a packet is received successfully, it is forwarded to the reordering buffer providing the in-sequence delivery to upper layer. According to the depicted implementation, the reordering buffer resides in S-RNC during soft handover (see 3GPP TSG RAN WG 1, meeting #31: "HARQ Structure", Tdoc R1-030247, available of at <http://www.3gpp.org>, incorporated herein by reference). In Fig. 7 the S-RNC MAC-eu architecture which comprises the reordering buffer of the corresponding user (UE) is shown. The number of reordering buffers is equal to the number of data flows in the corresponding MAC-eu entity on user equipment side. Data and control information is sent from all Node Bs within Active Set to S-RNC during soft handover.

8. Amend the fourth paragraph at page 7:

In this section some frequently used terms will be briefly defined and some procedures connected to mobility management will be outlined (see 3GPP TR 21.905: "Vocabulary for 3GPP Specifications" available at <http://www.3gpp.org>, incorporated herein by reference).

9. Amend the first full paragraph at page 9

The principle of this scheduling approach is to allow Node B to control and restrict the transport format combination selection of the user equipment by fast TFCS restriction control. A Node B may expand/reduce the "Node B controlled subset", which user equipment can choose autonomously on suitable transport format combination from, by Layer-1 signaling. In Node B controlled rate scheduling all uplink transmissions may occur in parallel but at a rate low enough such that the noise rise threshold at the Node B is not exceeded. Hence, transmissions from different user equipments may overlap in time. With Rate scheduling a Node B can only restrict the uplink TFCS but does not have any control of the time when UEs are transmitting data on the E-DCH. Due to Node B being unaware of the number of UEs transmitting at the same time no precise control of the uplink noise rise in the cell may be possible (see 3GPP TR 25.896: "Feasibility study for Enhanced Uplink for UTRA FDD (Release 6)", version 1.0.0, available at <http://www.3gpp.org>, incorporated herein by reference).

10. Amend the first full paragraph at page 13

A retransmission protocol with asynchronous HARQ feedback information uses sequence numbers (SN) or other explicit identification of the feedback messages whereas protocols with synchronous HARQ feedback information identifies the feedback messages based on the time when they are received, as for example in HSDPA. Feedback may be sent on the HS-DPCCH after a certain time instant upon having received the HS-DSCH (see 3GPP TR 25.848: "Physical Layer Aspects of High Speed Downlink Packet Access", version 5.0.0, available at <http://www.3gpp.org>, incorporated herein by reference).

11. Please delete the fourth and fifth full paragraphs at page 15, lines 15-18.

12. Amend the fourth full paragraph at page 15

According to an embodiment of the present invention a method for transmitting data packets from a mobile terminal to a base station using a hybrid automatic repeat request protocol and soft combining of received data is provided. The method may comprise ~~the step of~~ transmitting a data packet from the mobile terminal to the base station via a first data channel, and receiving a

feedback message from the base station at the mobile terminal, wherein the feedback message indicates whether the data packet has been successfully received by the base station.

13. Amend the third paragraph at page 16

In a further embodiment, the method may further comprise the ~~step of~~ soft combining each retransmission data packet with the data packet at the base station.

14. Amend the seventh paragraph at page 16

In a further embodiment, the method may further comprise the ~~step of~~ receiving a control message at the mobile terminal for the unsuccessfully received data packet in case the feedback message indicates that the data packet has not been received successfully. The control message may restrict the amount of information in a retransmission data packet to be sent for the data packet, and the retransmission data packet may be transmitted from the mobile terminal to the base station comprising an amount of information indicated in the control message.



15. Amend the seventh paragraph at page 17:

Further, in an alternative embodiment of the present invention the method may further comprise ~~the step of~~ soft combining the retransmission data packet and the transmitted data packet at the base station to obtain a combined data packet.

16. Amend the first paragraph at page 18:

In another embodiment, the method may further comprise the ~~step of~~ determining the amount of information for the retransmission data packet at the base station based on the reception quality of the data packet or the combined data packet.

17. Amend the third paragraph at page 18:

A further embodiment of the present invention provides a mobile terminal transmitting data packets to a base station using a hybrid automatic repeat request protocol and soft combining of received data is provided. The mobile terminal may comprise [a] transmitting means unit for transmitting a data packet to the base station via a first data channel, and [a] receiving means unit for receiving a feedback message from the base station, wherein the feedback message indicates whether the data packet has been successfully received by the base station.

18. Amend the fourth paragraph at page 18:

Further, the transmitting means unit may transmit the retransmission data packet to the base station via a second data channel in case the feedback message indicates that the data packet has not been received successfully.

19. Amend the fifth paragraph at page 18:

Another embodiment of the present invention provides a mobile terminal ~~comprising means adapted~~ operable to perform one of the methods outlined in the various embodiments above.

20. Amend the sixth paragraph at page 18:

In another embodiment of the present invention a base station receiving data packets from a mobile terminal using a hybrid automatic repeat request protocol and soft combining of received data is provided. The base station may comprise [a] receiving means unit for receiving a data packet from the mobile terminal via a first data channel, and [a] transmitting means unit for transmitting a feedback message to the mobile terminal, wherein the feedback message indicates whether the data packet has been successfully received by the base station.

21. Amend the seventh paragraph at page 18:

Further, wherein the receiving means unit may be ~~adapted to~~ receive a retransmission data packet from the mobile terminal via a second data channel in case the feedback message indicates that the data packet has not been received successfully.

22. Amend the eight paragraph at page 18:

A further embodiment of the present invention provides a base station ~~comprising means~~ operable adapted to perform one of the methods outlined in the various embodiments above.

23. Please insert the following paragraph at page 29, after the third paragraph:

It would be appreciated by a person skilled in the art that numerous variations and/or modifications may be made to the present invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects to be illustrative and not restrictive.